

A SKETCH OF THE HISTORY  
OF  
SMALLPOX AND VACCINATION;

BEING  
THE SUBSTANCE OF A LECTURE,

DELIVERED FOR THE

MANCHESTER AND SALFORD SANITARY ASSOCIATION,

AT

ST. PETER'S SCHOOL, COLLIER STREET, GREENGATE,  
SALFORD,

AND AT VARIOUS OTHER INSTITUTIONS IN MANCHESTER AND SALFORD.

BY

WM. H. BARLOW, M.D.

HONORARY MEDICAL OFFICER TO THE GENERAL HOSPITAL AND DISPENSARY FOR  
SICK CHILDREN, MANCHESTER.

PUBLISHED BY REQUEST.

MANCHESTER: J. E. CORNISH.  
SIMPKIN, MARSHALL, AND Co., LONDON.  
1871.

PRICE TWOPENCE.



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TO

H. M. STEINTHAL, Esq.,

LATE CHAIRMAN OF THE BOARD OF GOVERNORS OF THE GENERAL  
HOSPITAL AND DISPENSARY FOR SICK CHILDREN,

THIS SMALL CONTRIBUTION TOWARDS A WORK WHICH HE HAS SO MUCH  
AT HEART—THE WELFARE OF THE YOUNG AND THE REDUCTION  
OF INFANT MORTALITY,

IS MOST RESPECTFULLY INSCRIBED

BY HIS OBEDIENT SERVANT,

THE AUTHOR.

2, CHAPMAN STREET, OLDHAM ROAD,  
MANCHESTER, 1871.



## SMALLPOX AND VACCINATION.

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“ THERE is no disease to which mankind is unhappily subject, so fatal in its effects, so universal in its influence, and which so deeply affects the minds of all people, as that we are now about to treat; and indeed no wonder, when daily experience proves that neither age nor sex, constitution nor climate, can defend us from the over-ruling power of this dreadful malady.”

Such were the words of Dr. T. Thompson, Physician to His Royal Highness Frederick Prince of Wales, in 1752; and he goes on further, to say that he “may venture to affirm, that it is now become more popular than even the pestilence itself, and frequently not much inferior to it in danger.” It is of this Lord Macaulay says—“That disease over which science has since achieved a succession of glorious and beneficent victories, was then (1694) the most terrible of all the ministers of death. The havoc of the plague had been far more rapid, but the plague had visited our shores only once or twice within living memory, and the smallpox was always present, filling the churchyards with corpses, tormenting with constant fears all whom it had not yet stricken, leaving on those whose lives it spared the hideous traces of its power, turning the babe into a changeling at which the mother shuddered, and making the eyes and cheeks of the betrothed maiden, objects of horror to the lover.”

We in the present day can happily form no adequate idea of the dread and terror, which this terrible and loathsome disease inspired; even members of the profession of medicine, now but rarely see the worst forms of smallpox, and we can scarcely conceive of the actual presence upon a community, of the horrors so graphically described by the writers of that day, when the afflicted “are separated from their best friends at the time when they most need their assistance;”—when “tender parents cannot be present with their

"children on a sick-bed, or take their leave of them in their last moments without the hazard of their own lives;"—when, "in consequence of this, towns and cities, which were before easy and flourishing, are in a little time brought into great distress,—trade and business are at a stand, families are lamenting the loss of their most hopeful branches, who have been cut off in the flower of their age, and those who are liable to this calamity have very little enjoyment of themselves, as they know not how soon they may be visited with it." And the same writer, whose book was edited by the well-known Dr. Doddridge, goes on to say—"This severe disease carries a good deal of terror with it; many fall by it in the bloom of life, and many in the midst of their days, and it is not without the utmost hazard that others come off with their lives. It turns many into frightful spectacles, and is attended with the most dismal consequences. Loss of sight, lameness, long confinement, a broken constitution, countenances so altered that their nearest relations hardly know them, and a train of other miseries which it is not easy to enumerate, do often succeed it where it is not mortal. I am not ashamed to own," he continues, "that I am afraid of it. A much better man than myself has declared that his flesh trembled for fear of God, and that he was afraid of His judgments." (Some, on "Inoculation." London, 1752.)

Such was the condition of the people of England in the 17th and 18th centuries, and the calm evidence of official documents tells the same sad story. From an examination of the Bills of Mortality for the city of London, published by Dr. Heberden in 1801, it appears that from 1701 to 1800, out of the whole mortality registered, 85 per 1,000 deaths were from smallpox; but for the last fifty years of that century there were over 97 per 1,000. In other words, of all deaths, from all causes, at all ages, one in every ten was from smallpox. Nay, even these figures do not show the whole of the terrible and awe-striking truth. From statistics taken in Glasgow, from 1783 to 1802, it is proven, that of the deaths of children under 10 years of age, one-third were from this cause. Further, it is to be borne in mind that this is only the measure of its fatality, only those of its victims (though perhaps the happiest portion) who

had succumbed entirely to its force ; and we can but guess at that vast amount of misery, permanent injury, blindness, lameness, ruin of mind as well as body, deafness, and disfigurement, which formed the signs by which its track was marked,—results happily so rare in modern times. We have, however, some sources of information which supply us with the materials for arriving at an estimate of the proportion of deaths to attacks ; and from the earlier Reports of the Smallpox Hospital we find that one person in every six attacked died, but in the latter part of the 18th century the rate was much higher, for during the last twenty-five years of that period  $32\frac{1}{2}$  per cent. of all cases admitted died. Nor has this fatality diminished, for even now, among those who are unprotected by vaccination, the rate is still the same. I quote from the “ Medical Times and Gazette ” of January 14th, 1871, that, at Liverpool, of 37 cases of smallpox in unvaccinated persons 19 died. In short, the mortality is nearly one-half. And it stands recorded that two of every three persons applying for relief to the Hospital for the Indigent Blind, owed their loss of sight to smallpox. (Sir G. Blane.)

These were the effects of this loathsome disease here in England, where all the appliances of civilization, and all the skill of her best physicians, were bent towards its amelioration ; but in other and less civilized lands, its ravages were such as have, in all probability, never been equalled by any other plague known to humanity. Whole tribes were stricken down, and even altogether swept away from among the aboriginal inhabitants of North America ; as befel the large and powerful tribe of Mandans, whose amiable and hospitable disposition, and manly virtues, were the theme of eulogy, by one who spent some years of his life among them, (the great American traveller Catlin,) and who were within a very short period, entirely swept from the face of the earth, leaving not a single representative alive.

In the very height of all this terror and destruction, when the people seemed to live in the very midst of the pestilence, when the number of deaths was continually increasing, and the very air might seem to be filled, with the breathings of the angel of death, at this time it was, that out of the darkness there shone forth a light, which instantly illumined with the brightness of reviving hope, the face of

the habitable globe. The same writer I have before quoted says—“ If any method could be found out to deliver mankind, from these “ fears and dangers, how great a blessing should we esteem it ! One “ would imagine that there should be no need of argument to “ recommend it.” He could not see 150 years ahead (the book was written in 1725), but even then, there was upon the horizon a faint light, betokening the dawn of a brighter day, and it was in support of that opening promise, the practice of inoculation, that the book was written.

A woman of spirit and courage, as well of brilliant talent, the Lady Mary Wortley Montague, residing at Constantinople with her family, heard of a practice, in vogue among the Circassians, of artificially producing smallpox at an early age, in order that the value of their female children, might not be afterwards impaired, by the destructive effects of the disease upon their beauty, at a time when they would be required for the harem of the Turk. No doubt among the females she would see, there would necessarily be the most favourable and successful of the results of that practice, the failures, the dead, and the disfigured remaining at home, or being employed in the humbler offices. But however that may be, she saw sufficient to impress her deeply, with the value of the operation as a means of passing through the dreaded ordeal in a milder and more favourable manner. She had the confidence and courage to allow the virus from a smallpox pustule to be introduced under the skin of the arm of her son ; and he passing through the disease favourably and successfully, she wrote to her friends in England, and so laid the foundation of a practice which afterwards became very general among the wealthier classes ; and in 1722, returning to England, her daughter was here submitted to the same process.

Still the ravages of mallpox increased. Yet, in spite of this (and it seems to me to be the strongest evidence of the terror, with which the natural disease was viewed,) the practice spread ; for it was well proven that when artificially induced, smallpox was much less fatal than when accidentally acquired. And this is easily understood, when we remember that in the former case the time could be chosen and the patient prepared to resist the attack before submitting himself to the operation. But great as were its benefits to the

individual, they were to my mind counter-balanced by the ill effects upon the community; for every case of induced smallpox, though it might be mild and benign, in its effect upon the patient, was a centre of contagion, spreading the disease to others, in the natural and not necessarily mild form. So evident had this become towards the end of the 18th century, that it was already the subject of public comment, and even had not events occurred which superseded its necessity, it would in my opinion have been abolished by the legislature.

In a work from which I have already quoted, published in 1801 by Dr. Heberden, he states, that "from the printed accounts of the "Smallpox Hospital, where, from their numbers, the truth can be "best ascertained, while by the natural smallpox there die one in "six, from the inoculated smallpox 399 out of 400 recover." But he also says—"While the inoculation of the wealthy keeps up a "perpetual source of infection, many others who either cannot "afford, or do not choose to adopt the same method, are continually "exposed to the distemper;" thus, "while inoculation may justly "be esteemed one of the greatest improvements ever introduced "into the medical art, it occasions many to fall a sacrifice, to what "has obtained the distinction of the natural disease." Such was the condition of the country in relation to this terrible affliction at the close of the 18th century. But now began the dawning of that brighter day in which we live,—the kindling of that ray of hope in whose widening beam we all now rejoice; and which, though not as yet attained to the full glory of its capability, has already banished, like clouds before the sun, the misery and dread in which our forefathers dwelt so long.

It was in the year 1776 that Dr. Jenner, then practising at Berkeley, in Gloucestershire, noticed that many persons whom he was called upon to inoculate with smallpox virus, resisted every attempt to bring on the disease; and his curiosity being aroused, he instituted a series of inquiries, the result of which went to show that these persons had suffered from a disease they called the cow-pox, which was contracted by milking cows affected with a peculiar eruption on their teats. The neighbourhood being an agricultural one, and abounding in dairy farms, was favourable to the prosecution

of the inquiry, and it was soon discovered that a tradition existed that this was a preventive of the smallpox. This was, however, an opinion of but recent origin, and was by no means universal. The facts were so far encouraging, and Jenner now commenced the series of experiments and researches which were to lead him to an immortal fame. But at the first steps he was met with difficulties and contradictions which might well have discouraged and defeated a less resolute and determined man. He found that many persons "who seemed to have undergone the cowpox, nevertheless, on inoculation with the smallpox, felt its influence just the same as if no disease had been communicated to them by the cow;" and upon enquiry among the medical men practising in the country around him, he found the general opinion to be, that "the cowpox was not to be relied upon as a certain preventive of the smallpox." "This," he states in his pamphlet on the "Origin of Vaccine Inoculation," "for awhile damped but did not extinguish my ardour;" and instead of folding his arms and yielding to the difficulties, they only served to stimulate him to fresh exertions, and a more thorough, and complete research. He visited the dairies, and wherever a cow was reported to have the pock, there did Jenner pursue his enquiries and examinations. In this way he soon discovered that the cow was subject to a variety of spontaneous eruptions upon the teats, and that all these were capable of communicating sores to the hands of the milkers, but to the farmers and their labourers, they were all alike cowpock. A long and careful process of watching proved that one, and one only, of these eruptions possessed any protective power, and to this Jenner gave the name of "True Cowpox," calling the other spurious, or false. This was a great step gained, but only to be confronted with another and apparently still more formidable obstruction. Instances came to his knowledge, where the genuine true cowpox had broken out in a dairy, and where all the persons employed about the animals had suffered at the same time, and apparently in the same way, and yet some of these persons were found liable to receive, and did receive the smallpox. Here it is that Jenner shows his greatness of mind, and to his painful and convincing investigations at this point, it is that we owe the greatest blessing, ever sent by God to suffering humanity, since that day when

the angels proclaimed—"Peace on earth and goodwill to men." Carefully and thoughtfully did he continue to watch the natural progress of the disease in the cow, and "reflecting that the operations of nature are generally uniform, and that it was not probable 'the human constitution should in some instances be perfectly shielded, and in others remain unprotected,'" he resumed his experiments. And the result was triumphant, for he discovered that the pustules upon the teats of the cow underwent progressive changes, just as those of smallpox do, upon the person who is its subject, and that the power of the virus differed at different periods of the growth of the pustule, so that a cow might at one time excite the true disease in one person, and at another produce a sore upon the hands of a milker, and still, while the one would be protected, the latter would be left as open as ever, to the assaults of the enemy. Here the key-note was struck, and from this time all was pretty plain sailing.

So far we have followed Jenner in his researches into the nature of the cowpox. The reality and amount of protection it affords was proven by a series of authenticated cases which were afterwards inoculated with the virus of smallpox, without producing any effect beyond a slight and temporary inflammatory reddening at the site of puncture, and occasional slight febrile symptoms, which speedily passed away. It was while pursuing these experiments, and proving by the test of inoculation the reality of the immunity bestowed by the true cowpox upon individuals who had been subjected to its influence, that the idea first occurred to him, that it might be possible, to propagate this disease in the human subject, by the same process of inoculation, which had already been applied to the case of smallpox, and he had not very long to wait, before an opportunity of putting this to the proof came before him.

A dairymaid, residing with a farmer near to Berkeley, received the infection of the cowpox from her master's cows, through a scratch upon her hand, and the vesicles resulting therefrom, were recognised by Jenner, as those of the true and protective character. From these the fluid was taken, and inserted into the arm of a healthy boy, eight years of age, named Phipps, on the 14th of May, 1796, and the undaunted discoverer, had the great pleasure of

seeing the disease pass through its now well-known stages, and of remarking, what he afterwards more fully proved, its similarity to the progress of the pustule of inoculated smallpox. The boy was so slightly affected by the disease, that it was scarcely credible that he could be efficiently protected, but this was proven to be the case, by the result of an inoculation, with the matter of smallpox, on the 1st of July following, and again, after a lapse of five years, without any symptoms of that disease resulting. Filled with the confidence of success, he from this time extended his experiments over a wider field, and in June, 1798, published to the world the results he had obtained, and this was speedily followed up with further proofs, and more extended experiments, in 1799 and 1800. At first of course, his assertions were received with scepticism by all, but actual experiment soon carried away all doubt, and in 1801 he could say—  
“Hundreds of them (*i.e.*, medical men), from actual experience,  
“have given their attestations, that the inoculated cowpox proves  
“a perfect security against smallpox, and I shall probably be within  
“compass in saying that thousands are ready to follow their  
“example.” At this early date a hundred thousand persons had already been vaccinated in Great Britain and Ireland, and vast numbers through Europe and other parts of the globe. (Jenner on “Origin of Vac. In.,” 1801.)

But rapid as was the spread of the practice, and great as were the benefits it bestowed, it was not even then, without strenuous and unscrupulous opponents. There were the religious opponents, who declared that it was opposing the decrees of Providence, and rebelling against God. There were others who asserted that it introduced the diseases and foulnesses of beasts into the human system, and even that it produced physical changes, such as made the human visage into the likeness of an ox (and a plate was actually issued by a certain Dr. Rowley, of a boy said to have been so changed). It was said that it caused degeneration, mental and physical, of the species. But as Jenner himself remarked, the best arguments for, or against vaccination, are those engraved by the point of the lancet; and so simple and sure a means of safety, carrying along with the protection it so undoubtedly affords, no such drawback, as always accompanied the process of inoculation with

the smallpox, in the liability to dissemination by infection: could not but become widely popular so soon as it became known and tried.

Dr. Woodville, of the Smallpox Hospital, was one of the earliest to test the assertions of Jenner; and finding a source of natural cowpox in a dairy in the neighbourhood, "he commenced on the 21st of January, 1799, a series of observations on Vaccination, which ended in establishing to the complete satisfaction of all the principal physicians and surgeons in London its efficacy as a safe and certain preventive of the smallpox." At this Institution the two processes, of inoculation with smallpox, and of vaccination, were practised; but the perfect security and greater safety of Jenner's discovery was so speedily evident, that in 1808 it was entirely depended upon for out-patients, and the former process was abolished and formally forbidden in 1822. The progress with which the practice spread may be inferred from the number of operations performed at the National Vaccine establishments, which were, in 1809, 733, and in 1820, 8,957. (Report of Smallpox Hospital, 1837.)

We must now inquire as to the effects upon the public health which had been produced by this practice. We have seen, that for the last fifty years of the 18th century, the mortality for London was almost one death from smallpox out of every ten. The actual numbers given by Heberden show 97.2 per 1,000. For the first fifty years of the present century the numbers fell to  $35\frac{1}{2}$  per 1,000. But mark the ratio of decrease. From 1801 to 1810 inclusive, the rate was 64 per 1,000; from 1841 to 1850, it was 16 per 1,000, and from 1851 to 1860, it was 11 per 1,000; and the reduction is coincident with the spread of vaccination, which was first provided gratuitously in 1840, and made compulsory in 1854. These numbers refer to the London district only; but if we take the whole of England and Wales, we find these results fully borne out; and in the years 1861 and 1862, the rate for the whole country was  $3\frac{1}{2}$  per 1,000.

In the public practice of Manchester and Salford, as reported by the Sanitary Association of this city, there were, in 1868, but four deaths from this cause, out of a total of 3,335; and with a total

number of deaths for the whole townships of Manchester, Salford, Pendleton, Chorlton, Hulme, and Ardwick, of 14,465, there were but 13 from smallpox. In 1869, although the disease was spreading, there were only 70 deaths out of a total of 12,761, and in 1870 there have been 71 deaths out of a total of 12,514, or less than six per 1,000, even during a period of epidemic. The annual death rate from smallpox, for the week ending February 18th, 1871, was, in London, 3.5 per 1,000, and in Liverpool, 10.5. (Registrar General's Report.)

Nor are these results confined to our own country; but in all lands where the practice of vaccination is introduced, the mortality from smallpox is diminished so much, as to reach scarcely one-tenth, in some much less than one-tenth of its former proportion. Thus, in Sweden, before the introduction of this practice, the average death-rate from smallpox was 2,050 per million of population; but for the forty years following 1810, only averaged 158. In Westphalia, from 2,643 it fell to 114; in Bohemia, Moravia, and Silesia, from 4,000 to 200; in Copenhagen, from 3,128 to 286, and in Berlin, from 3,422 to 176 per million. And it is precisely in those places where the vaccination is most thoroughly carried out that these numbers are least.

Vaccination does not give an *absolute* security from smallpox. This has never been claimed for it; but Jenner's own words concerning its power have been over and abundantly proven. "Duly and efficiently performed," he says, "it will protect the constitution from subsequent attacks of smallpox, as much as the disease itself will. I never expected it would do more, and it will not, I believe, do less." And it is now well known that smallpox may occur thice in the same individual. But observations made during a period of upwards of thirty years at the Smallpox Hospital, have shown that while 35 per cent. of those unvaccinated persons who have smallpox die, of the vaccinated there die of those with one mark 7.73 per cent., with two 4.70, with three 1.95, with four 0.55 per cent., and of those who have previously had smallpox, 19 per cent.

A very good instance of the protective power of vaccination is afforded by the army, every soldier being vaccinated; and in the

twenty years from 1817 to 1836 inclusive, in dragoons and guards, with an aggregate strength of 44,611 men, there were but three deaths from smallpox. Among troops at Gibraltar, for the same period, the same figures representing the strength, there was only one death from smallpox. (Aitken, Practice of Med., art. Var. Vace.)

The occurrence of second and third attacks of smallpox in the same individual has been abundantly proven. One of the latest inquiries into the subject, was made by the Epidemiological Society of London, in 1851, when more than 200 cases of second smallpox were abundantly and clearly reported ; and as yet one per cent. of the cases admitted to the Smallpox Hospital are second attacks. But the experience of more than thirty-four years at that Institution has shown that no case of smallpox has occurred among the nurses who are constantly exposed to the infection, and who are always revaccinated upon their entrance ; and, as a recent instance of the real power of vaccination in stamping out smallpox, may be mentioned a fact noticed by the "Lancet," January 21st, 1871, that the district of Pinchbeck, Lincolnshire, with a population of 3,000, has only had one death from smallpox during the last thirty years, and that was of a young man who had never been vaccinated.

That vaccination has the power, of protecting the system from smallpox, has been proven beyond all doubt, by the experience of seventy years ; and the voice of the whole profession of medicine, (with a few very unimportant exceptions) has on three distinct occasions, declared its full confidence, and reliance upon this power, although it acts "not always by absolutely preventing, but in some "cases by controlling that disease." (Seaton on "Vaccination.") This has been proven (as far as anything can be humanly said to be proven) times without number, and "he who disputes it is equally "unreasonable as he who opposes in like manner any proposition "in Euclid." (Alison.) And remember further, that although we are so guarded, in avoiding the claim of absolute protection, yet the cases in which smallpox even of the modified form takes place, after exposure to infection, are the exceptions, and very rare ones. If we consider the vast number of persons, who are vaccinated and now living, who have passed through epidemics of smallpox unscathed, even though the vast majority have but been vaccinated

once, and that in infancy, we shall have a more complete, and more just view, of the reality of the immunity we enjoy, even in the midst of epidemics, and frequent exposure to contagion.

Taking the fact, then, as sufficiently proven, that vaccination does protect from smallpox, let us pass to the consideration of the objections which have been made to the operation upon the ground that, although it has led to a diminution in the mortality from smallpox, yet this has been compensated or exceeded by the increase in mortality from other causes. This assertion has been entirely disproved by Dr. Greenhow and Dr. Farr, who have shown that not only has the grand total of death-rates been diminished, but that the death-rates of two classes of disease have been diminished in a very remarkable degree; and these are—first, scrofulous affections, including consumption; second, continued fevers, especially typhoid fever. “In London, the annual death-rate at the middle of the last century was 355 per 10,000 of population,” and if we left out the deaths from smallpox, there remained 325; but in the middle of the present century it was, *including smallpox*, only 249. In Sweden, from 1755 to 1775, it was 289 per 10,000; from 1841 to 1850 it was 205. During this period, too, the mortality in early life, and at all ages up to old age, has steadily diminished; and, contrary to the popular opinion, more people now live to a good old age than at any previous time, of which we have any record.

To the saving of life from scrofulous and tuberculous disease, there can be no doubt, that vaccination has been a direct assistance, for one of the most dreaded results of the natural smallpox was, and still is, that its depressing influence should, if the life be spared, develope the latent seeds of consumption, or some other of the protean forms under which this tendency exhibits itself. There is another, and a very serious constitutional disease, which the objectors to vaccination have alleged, to have been conveyed from child to child by the practice. I allude to that of constitutional syphilis; but apart from the theoretical difficulty there is, in believing that the lymph of the vaccine vesicle, should carry with it the germs of another disease, there stand upon record the experiments of Dr. Boeck, who, experimenting upon the subject of syphilization,

or inoculation with the poison of this disease, mixing it with vaccine lymph, introduced this into the system of several patients, but in every case produced only a sore characteristic of the disease, and never effected vaccination. In 1856 the medical officer of the Board of Health, from some 500 or 600 medical men, including almost every distinguished authority in Great Britain and many in France and Germany, in reply to the question—"Have you any "reason to believe or suspect that lymph, from a true Jennerian "vesicle, has ever been a vehicle of syphilitic, scrofulous, or other "constitutional infection to the vaccinated person?" received a general chorus of denial, and some of the most eminent have strongly expressed their opinion as to its impossibility. "The "suggestion," says Dr. Latham, "amazes me." "I apprehend," says Mr. J. H. Green, the late President of the Royal College of Surgeons of England, "that persons entertaining such opinions "can be only those who are ignorant of the circumstances under "which diseases are ordinarily propagated." Dr. West, of the Children's Hospital; Professor Paget, whose practice among children was immense; Marson, Leese, and Tomkins, whose experience of vaccination had been enormous; Acton, Lee, and Langston Parker, whose lives had been spent in the study of syphilis, all bear the same testimony.

But men there are who think that they have occasionally seen syphilitic symptoms following vaccination; and it is not doubted, nor attempted to be denied, that the insertion of the specific virus, would produce the particular symptoms characteristic of that disease; but the character of the disease would be evident, and the operator would be responsible for his act.

The question of the possibility of transmitting the poison of syphilis by blood accidentally introduced during the operation is a moot point as yet; and when we remember that the prior question of the communicability of hereditary or infantile syphilis by any amount of blood inoculation, remains as yet unproven, we may at least doubt, whether the minute portion which it would be possible to introduce accidentally during vaccination, could produce such effects.

In fact, without denying the possibility of producing by malpraxis, or culpable carelessness untoward results to a few individuals, that

would be no argument against the manifest good to millions of the human race. And if during the 70 years, in which vaccination has been practised, almost all over the habitable globe, and from the millions upon millions, who have been subjected to this risk, the number still remains so small, as to escape the notice of men whose lives have been spent in practising, and studying the process and results, and is yet a matter of doubt to medical men in general,—then how minute! how infinitesimal must such a risk be! The Act of Parliament which renders vaccination compulsory, rather unwisely, as I think, fixes the limit of time allowed to the parent at three months after birth, just about which time begin to appear, those eruptions of the skin, to which children are especially liable, and from the second to the fourth month is also the period at which constitutional syphilis ordinarily manifests its presence, by certain visible and prominent symptoms. These symptoms, then, appearing in due course after vaccination, are of course ascribed by the parents to that operation, the great majority of parents not being *very* careful to distinguish the “*post*” from the “*propter hoc*.”

A very great outcry was raised some time ago against vaccination, on the strength of a case where a child had died from erysipelas supervening upon that operation. This is a danger of a very minute kind. Among some hundreds of thousands of children who are submitted to vaccination, there will be one or two, of such peculiarity of constitution as to be liable to such a risk, just as there are some to whom a scratch of a pin will bring the same danger, or as some will bleed to death from the extraction of a tooth; but this is all.

And now, to conclude this review, of what one of the opponents of the practice, calls “the superficial reasoning and visionary experience “of the maudlin Jennerites,” I cannot do better than quote a few words from an article in the “Saturday Review” of January 26th, 1871:—“The Englishman is, as we all know, an eccentric animal, “but perhaps he has seldom developed a more singular propensity “than his marked affection for contagious diseases. He resents “with an almost pathetic stupidity any interference with his right “to catch every variety of deadly complaint.” And no one would have a right to object, did the case end here; but the people at large,

though they may with perfect equanimity, allow to any foolish person, the right to take for himself smallpox, or any other deadly disease, yet they may very well object, to his right of spreading among others, who do not view these things as calmly as himself, the benefits of such contagion.

The last reports we have received from London show that smallpox is spreading there with alarming speed, and the reports from the Hampstead Hospital show the mortality among the unvaccinated to be 41 per cent., while no vaccinated child has died there; ("Times," January 28th, 1871.) and his Lordship the Bishop of Manchester stated a few days ago, that during twenty years' incumbency of two parishes, before his consecration to this see, though constantly visiting among the sick, he never met with a case of smallpox.

From the Registrar-General's returns for the past year we find that during the last quarter of 1870 the deaths from smallpox in England have been 1,229—more than double that of the quarter immediately preceding, and almost treble that of the other quarters; and if we turn to the reports of the Smallpox Hospital, we shall find some figures which will serve to explain the cause of this increase. While in 1860 only 7.37 per cent. of the cases admitted to that institution, were children under ten years of age, in 1870 more than 16 per cent. were under that age. In other words, there are more children now unvaccinated than there were ten years ago, and these not only add to the mortality themselves, but spread among those who are but imperfectly protected, by insufficient vaccination, or by lapse of time, the evils of this disease. The mortality here has been 42 per cent. among the unvaccinated children, and 7.9 per cent. among those who have been vaccinated. But the report says "The failures of vaccination to prevent *fatal* smallpox, which have occurred, are almost all of them due to the careless and imperfect manner in which it has been practised." Further, the lapse of years weakens, though it does not destroy, this protective power, and I cannot do better than quote here, a recommendation prefixed to this Report:—That as "a very large number of the adult population of this country are without adequate protection from vaccination, and are liable to take smallpox, in its gravest and most deadly form, all persons who have not already had smallpox,

"and have been or are likely to be exposed to the infection of that disease, and all who have not several (at least four) good marks testifying to the character and efficiency of the primary vaccination, ought to be revaccinated." Indeed it is perfectly true, as the medical officers state, that in view of this great and increasing epidemic, "revaccination is of scarcely less importance to the adult than is primary vaccination to the infant;" and it is to be hoped that amended legislation upon the subject will tend to give to England, the same immunity from epidemics of smallpox, which has been for many years enjoyed by Scotland and Ireland.

It is a melancholy subject for a peroration to such facts as we have been recounting, that we should have to recognise, the formidable increase, of an epidemic of so preventible a disease as smallpox; and it is sad to reflect that in this matter, we are reaping the harvest of a neglect of vaccination, the result of a combination of injudicious and too rigid legislation, of supineness in authorities entrusted with its performance, and of the false and foolish clamours, of a number of fanatics and charlatans, with their following of ignorant and credulous dupes.

*Number of Deaths from Smallpox per 1,000, from all causes, occurring in the Districts included in the Bills of Mortality.*

DECENNIAL PERIODS.

1701 to 1710 .....	56.6	1751 to 1760 .....	102.7
1711 " 1720 .....	80.4	1761 " 1770 .....	102.7
1721 " 1730 .....	84.0	1771 " 1780 .....	96.3
1731 " 1740 .....	77.1	1781 " 1790 .....	92.2
1741 " 1750 .....	72.0	1791 " 1800 .....	94.2

AFTER VACCINATION.

1801 to 1810 .....	64.0	1831 to 1840 .....	23.0
1811 " 1820 .....	42.0	1841 " 1850 .....	16.0
1821 " 1830 .....	32.0	1851 " 1860 .....	11.0

The last two numbers are from the Report of the Registrar-General, and the districts are larger than those included in the Bills of Mortality.



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A SKETCH OF THE HISTORY OF  
SMALLPOX AND VACCINATION.

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BY WM. H. BARLOW, M.D.